

CLAIMS

1. Apparatus comprising at least one absorber, at least one cold separator (D1) from which is extracted a gaseous phase (8) that feeds absorber (C1), at least one means for recycling to said cold separator of at least a portion of liquid effluent (3) obtained from the absorber means for mixing recycled liquid effluent with feedstock (1), at least one cooling means (RF1) for cooling recycled liquid effluent, at least one means for recovery (9, 10) of a light hydrocarbon-enriched liquid fraction obtained from said cold separator and at least one means for evacuation of gases from absorber (8).

2. Apparatus according to claim 1, further comprising a fractionation column (C2) for fractionating light hydrocarbon-enriched liquid fraction (10) obtained from cold separator (D1) into at least two fractions and means for transporting said fraction (10) to said fractionation column.

3. Apparatus according to claim 1, further comprising means for withdrawing said light hydrocarbon-enriched liquid fraction (3) obtained from absorber (C1) without being recycled to cold separator (D1).

4. Apparatus according to claim 3, further comprising means for mixing light hydrocarbon-enriched liquid fractions obtained from absorber (C1) and separator (D1).

5. Apparatus according to claim 1, wherein separator (D1) is located under absorber (C1).

6. Apparatus according to claim 1, wherein separator (D1) and absorber (C1) comprise two sections that are superposed inside the same piece of equipment.

7. Apparatus according to claim 1, further comprising means for a recycling of liquid fraction (10) obtained from separator (D1) and at least one cooling means (RF2) for cooling recycled liquid fraction.

8. Apparatus according to claim 1, further comprising a fractionation column (C2) for fractionating the liquid effluent obtained from cold separator (D1) into at least 3 fractions (6, 15, 22) of which one (15) constitutes at least partly the liquid phase that is recycled to absorber (C1).

9. Apparatus according to claim 2, further comprising at least one exchanger (E1, E2) for exchanging heat between liquid phase (10) obtained from cold separator (D1) and liquid phase (15) recycled to absorber (C1) after fractionation in column (C2).

10. Apparatus according to claim 1, comprising at least one pump (11) for the recirculation of at least one liquid flow.

11. Apparatus according to claim 1, further comprising means for collecting the light hydrocarbon-enriched effluent directly at the outlet of cold separator (D1).

12. Apparatus according to claim 9, further comprising means for collecting light hydrocarbon-enriched effluent at a lateral output (22) of fractionation column (C2).

13. Apparatus according to claim 1, further comprising a conversion unit located upstream and in communication with said adsorber D1.

14. Apparatus according to claim 14, in which the conversion unit is a unit for hydrogenation, hydrotreatment, hydroconversion, isomerization or cracking.

15. Apparatus according claim 2, further comprising means for recycling, in which purge gas (6) from column (C2) to absorber (C1).

16. A process for recovery of a hydrogen-rich gas in apparatus according to claim 1.

17. A process for recovery of a hydrocarbon-enriched liquid in apparatus according to claim 1.

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